

Claims

- [c1] 1.A programmable Gamma circuit, comprising:
a controller, receiving a control signal externally, and outputting a plurality of Gamma setup signals according to the control signal, wherein the Gamma setup signals are in digital form and each of the Gamma setup signals comprises a plurality of bit signals; and
a plurality of Gamma units, wherein each of the Gamma units receives one of the Gamma setup signals and outputs a Gamma voltage signal corresponding to the Gamma setup signals.
- [c2] 2.The programmable Gamma circuit as recited in claim 1, wherein the control signal is transmitted via I²C interface bus in an integrated circuit.
- [c3] 3.The programmable Gamma circuit as recited in claim 1, wherein the control signal is transmitted via 3-wire interface bus.
- [c4] 4.The programmable Gamma circuit as recited in claim 1, wherein each of the Gamma units comprises:
a plurality of Gamma resistors, each of the Gamma resistors having a first terminal and a second terminal, the

first terminal of any one of the Gamma resistors receives one of the bit signals of the Gamma setup signals correspondingly, the second terminal of each of the Gamma resistors is coupled together where current outputted from each of the Gamma resistors is summed up to a Gamma current; and
an amplifying unit, receiving the Gamma current and outputting the Gamma voltage signal correspondingly.

[c5] 5.The programmable Gamma circuit as recited in claim 4, wherein the amplifying unit comprises:
a feedback resistor, having a third terminal and a fourth terminal; and
an operational amplifier, having a first input terminal, a second input terminal and an output terminal, wherein the first input terminal is coupled to a voltage level, the second input terminal and the third terminal of the feedback resistor are coupled and receive the Gamma current, and the output terminal and the fourth terminal of the feedback resistor are coupled and output the Gamma voltage signal.

[c6] 6.The programmable Gamma circuit as recited in claim 5, wherein the voltage level is ground voltage level.

[c7] 7.The programmable Gamma circuit as recited in claim 1, wherein the programmable Gamma circuit applies to a

driving circuit for a display apparatus.

- [c8] 8.The programmable Gamma circuit as recited in claim 7, wherein the display apparatus is a liquid crystal display.
- [c9] 9.A programmable Gamma circuit, comprising:
a plurality of Gamma resistors, each of the Gamma resistors having a first terminal and a second terminal, the first terminal of any one of the Gamma resistors receiving one of a plurality of Gamma setup signals, each of the Gamma setup signals being in digital form, and the second terminal of each of the Gamma resistors being coupled together where current outputted from each of the Gamma resistors is summed up to a Gamma current; and
an amplifying unit, receiving the Gamma current and outputting a Gamma voltage signal correspondingly.
- [c10] 10.The programmable Gamma circuit as recited in claim 9, wherein the amplifying unit comprises:
a feedback resistor, having a third terminal and a fourth terminal; and
an operational amplifier, having a first input terminal, a second input terminal and an output terminal, wherein the first input terminal is coupled to a voltage level, the second input terminal is coupled to the third terminal of the feedback resistor and receives the Gamma current,

and the output terminal and the fourth terminal of the feedback resistor are coupled and output the Gamma voltage signal.

[c11] 11.The programmable Gamma circuit as recited in claim 10, wherein the voltage level is ground voltage level.

[c12] 12.The programmable Gamma circuit as recited in claim 9, wherein the programmable Gamma circuit applied to a driving circuit of a display apparatus.

[c13] 13.The programmable Gamma circuit as recited in claim 12, wherein the display apparatus is a liquid crystal display.

[c14] 14.A display apparatus, comprising:
a display panel;
a control/modify circuit, for outputting a plurality of Gamma setup signals, wherein each of the Gamma setup signals is in digital form and comprises a plurality of bit signals; and
a driving circuit, coupling to the control/modify circuit and the display panel, wherein the driving circuit comprises a programmable Gamma circuit, the programmable Gamma circuit receiving the Gamma setup signals, and outputting a plurality of Gamma voltage signals correspondingly according to the Gamma setup sig-

nals.

- [c15] 15.The display apparatus as recited in claim 14, wherein the programmable Gamma circuit comprises a plurality of Gamma units, each of the Gamma units receives one of the Gamma setup signals, and outputs one of the Gamma voltage signals correspondingly according to the Gamma setup signals that is received.
- [c16] 16.The display apparatus as recited in claim 15, wherein each of the Gamma units comprises:
a plurality of Gamma resistors, wherein each of the Gamma resistors has a first terminal and a second terminal, the first terminal of each of the Gamma resistors receives one of the bit signals of the Gamma setup signal correspondingly, the second terminal of each of the Gamma resistors is coupled together where current outputted from each of the Gamma resistors is summed up to a Gamma current; and
an amplifying unit, for receiving the Gamma current, and outputting one of the Gamma voltage signals correspondingly.
- [c17] 17.The display apparatus as recited in claim 16, wherein the amplifying unit comprises:
a feedback resistor, having a third terminal and a fourth terminal; and

an operational amplifier, having a first terminal, a second terminal and an output terminal, wherein the first terminal is coupled to a voltage level, the second terminal and the third terminal of the feedback resistor are coupled and receive the Gamma current, the output terminal and the fourth terminal of the feedback resistor are coupled and output one of the Gamma voltage signals.

[c18] 18.The display apparatus as recited in claim 17, wherein the voltage level is ground voltage level.

[c19] 19.The display apparatus as recited in claim 14, wherein the display panel is a liquid crystal display panel.